What Is Ergonomics?

The goal of the science of ergonomics is to find a "best fit" between the worker and job conditions. Ergonomics tries to come up with solutions to make sure workers stay safe, comfortable, and productive. These usually involve changing tools, equipment, materials, work methods, or the workplace itself. Ergonomics is a new topic for the construction industry, but the ideas have been around for many years. For example, in 1894 the split-level scaffold was designed for masonry work in the U.S. to reduce workers' frequent bending. This new scaffold system was designed to improve workers' productivity by reducing the time spent in awkward positions. There is still a strong case for using ergonomic improvements both to reduce workers' exposure to risk factors for WMSDs and to improve their productivity.

Ergonomics looks at how:

- Physical abilities of the human body

— and —

- Limitations of the human body

ARE RELATED TO

- Work tasks
- Tools, equipment, and materials
- The job environment

Work-Related Musculoskeletal Disorders

Work-related musculoskeletal disorders (WMSDs) are the leading cause of disability for people in their working years. They can be caused by frequently working in a way that puts stress on the body, such as:

- Gripping
- Working in awkward positions
- Bending
- Using vibrating equipment.
- Kneeling
- Applying force
- Working overhead
- Squatting
- Lifting
- Repeating movements
- Twisting
- Over-reaching.

The best way to reduce WMSDs is to use the principles of ergonomics to redesign tools, equipment, materials, or work processes.

Simple changes can make a big difference. Using ergonomic ideas to improve tools, equipment, and jobs reduces workers' contact with those factors that can result in injury. When ergonomic changes are introduced into the workplace or job site, they should always be accompanied by worker training on how to use the new methods and equipment, and how to work safely.

Do You Need an Ergonomics Program?

Many ergonomics experts recommend that employers and joint labor-management groups develop their own ergonomics programs to analyze risk factors at the worksite and find solutions. These programs may operate as part of the site's health and safety program, or may be separate. An ergonomics program can be a valuable way to reduce injuries, improve worker morale, and lower workers' compensation costs. Often, these programs can also increase productivity.

There may be a particularly urgent need for an ergonomics program at your site if:

- Injury records or workers' compensation claims show excessive hand, arm, and shoulder problems; low back pain; or carpal tunnel syndrome.
- Workers often say that some tasks are causing aches, pains, or soreness, especially if these symptoms do not go away after a night's rest.
- There are jobs on the site that require forceful actions, movements that are repeated over and over, heavy lifting, overhead lifting, use of vibrating equipment, or awkward positions such as raising arms, bending over, or kneeling.
- Other businesses similar to yours have high rates of work-related musculoskeletal disorders.
- Trade magazines or insurance publications in your industry frequently cover these disorders.

Effective ergonomics programs have included the following elements:

- Employer commitment of time, personnel, and resources
- Someone in charge of the program who is authorized to make decisions and institute change
- Active employee involvement in identifying problems and finding solutions
- A clearly defined administrative structure (such as a committee)
- A system to identify and analyze risk factors
- A system to research, obtain, and implement solutions such as new equipment
- Worker and management training
- Medical care for injured workers

- Maintaining good injury records
- Regular evaluation of the program's effectiveness.

Education and training programs have been developed for construction general contractors by the Associated General Contractors, the United Brotherhood of Carpenters and Joiners, the Sheet Metal Occupational Health Institute, and the Laborers' Union. Although the problems and solutions described in these organizations' materials may be specific to a sector or trade, you may find them useful when developing your own ergonomics program.

For additional information on developing an ergonomics program, see *Elements of Ergonomics Programs* (NIOSH Pub. No. 97-117) at *www.cdc.gov/niosh/docs/97-117*.